GOVERNMENT/INDUSTRY CHARTING FORUM
Instrument Procedures Subgroup
November 28-29, 2000
RECOMMENDATION DOCUMENT

FAA Control # 00-02-230

SUBJECT: SIAP Deceleration Segment and High-Bypass Fan Engines.

BACKGROUND/DISCUSSION: TERPs descent gradients were formulated to accommodate aircraft performance--not air traffic and airspace requirements. The original TERPs descent gradient specifications were optimally 250 per mile for the initial approach segment, and optimally 0 to 150 feet per mile for the intermediate segment. The shallow intermediate segment was (and is) where the airplane is supposed to essentially level off, decelerate, and establish final approach configuration. Today, we are seeing an increasing use of "slow-down-while-going-down," not only in ad-hoc ATC procedures, but in the design of SIAPs as well. Late generation air carrier aircraft have high-bypass fan engines, with corresponding higher flight idle engine parameters than their predecessor turbojet aircraft. Thus, the "slow-down-while-going-down" requirements imposed by a capacity-driven NAS is tending to complicate and destabilize entry of air carrier aircraft into the final approach segment.

The maximum descent gradient for the initial and intermediate segments is 500 and 300 (318) feet per mile, respectively. It was presumed by the original authors of TERPs that good judgment in procedure design would preclude use of maximum gradients in both the initial and intermediate segments, except where obstacles made such an undesirable application mandatory. In the past few years the intermediate segment maximum was increased from 300 to 318 feet per mile, which matches the ILS glide slope. Where this maximum is applied, the intermediate segment effectively becomes a barometric extension of the ILS final approach segment, with "slow-down-while-going-down" the procedural "rule." Where the preceding initial segment is at, or near maximum, it becomes a very difficult, destabilizing operation for flight crews. ALPA believes this lowers the statistical margins of safety.

The primary ILS approaches for Los Angeles are attached for reference. Both contain an abundance of "slow-down-while-going-down," but the 25 ILS is arguably worse, because the speed brakes can be deployed on the 24 approach, and some attempt can be made to play catch up before the precision final approach fix (PFAF). This is not possible on the 25 approach. Even on the 24 approaches, with the usual speed control exercised by ATC there is often little opportunity to deploy the speed brakes and play dive-and-drive catch up prior to the PFAF. Also attached is our proposed interim improvement for LAX, which is consistent with today's MVA/parallel ILS turn-on requirements, unlike today's Runway 25 PFAF intercept altitude.

RECOMMENDATION: SIAP design directives must compel the use of 150 feet per mile of descent gradient in the intermediate segment except where obstacles prevent such application. Where the preceding initial segment descent gradient is increased beyond optimum, the intermediate descent gradient should be decreased to less than 150 feet per mile in ratio with the increase of the descent gradient in the preceding initial approach

segment beyond the optimum. This more realistic application of criteria will tend to offset the adverse effect the prolonged and excessive speed control by ATC has on safe entry into the final approach segment at major Part 139 airports.

In the long term, baro VNAV segments should precede the electronic final approach segment at Los Angeles, and perhaps at all Part 139 airports. But, even this concept will require some deceleration segment in the form of either a level off segment, or shallower VNAV segment prior to the PFAF. The industry needs to bring performance and operations experts together to determine the appropriate angle for baro VNAV initial and intermediate segments. ALPA believes this is a long-term solution so, in the interim, we need to get the traditional initial and intermediate "stair-case" segments at Part 139 airports back on the right track, and to be appropriate for today's high-bypass fan-engine-powered air transport aircraft.

COMMENTS: This affects FAA Handbook 8260.19, "Flight Procedures and Airspace," and related internal FAA directives.

Submitted by Captain Simon Lawrence, Chairman
Charting and Instrument Procedures Program

AIR LINE PILOTS ASSOCIATION
PH: (703) 689-4176
FAX: (703) 689-4370
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INITIAL DISCUSSION (Meeting 00-02): Simon Lawrence presented this issue on behalf of ALPA. There was a short discussion, however no alterations were made to the position paper. Dave Eckles, AFS-420, agreed to take the issue for policy consideration. Brad Rush, AVN-160, agreed to review the LAX ILS RWY 25L SIAP for possible design changes. ACTION: AFS-420 and AVN-160.

MEETING 01-01: Bill Hammett, AFS-420 (ISI), presented a status update paper prepared by Jack Corman, AFS-420. AFS-420 is currently performing an Airspace Simulation Analysis for TERPS (ASAT) modeling of the problem in order to provide standards on which deceleration segment criteria can be based. Criteria will be written when the study is complete – no estimated completion date was provided. Brad Rush, AVN-160, stated that the FPO is staffing re-design of the KLAX procedures that prompted ALPA's concern. ACTION: AFS-420 and AVN-160.
